

ARCEL[®] Resin - ULV HD Styropek Expandable Styrenics Product



TECHNICAL DATA SHEETS

RESIN COMPOSITION

Polyethylene/styrenic interpolymer, Expandable

PARTICLE DIAMETER

98% between 0.84 – 1.68 mm

SHAPE

Spherical

COLOR

White

AVERAGE VOC CONTENT

Pentane 4.5%
Plasticizer 0.3%

SAFETY

Provide adequate exhaust ventilation during resin and pre-puff storage and processing as recommended in the [ARCEL resin Safe Handling and Storage Guide](#) to avoid the hazardous accumulation of the pentane blowing agent. Keep product away from lit smoking materials and open flames.

RAW BEAD STORAGE

ARCEL ULV HD resin is a low volatile version of ARCEL resin which is not required to be kept in refrigerated storage. At ambient conditions, the shelf life will depend on the end-use density target. At 4°C (40°F) or lower, the shelf life is expected to be indefinite.

EXPANSION

ARCEL ULV HD resin can be continuously or batch expanded using conventional EPS expansion equipment. Some minor material handling modifications may be required. ARCEL ULV HD resin has been expanded in continuous expanders ranging in size from 210 to 1,135 liters (55 to 300 gallons) as well as several sizes of batch expanders.

Freshly expanded ARCEL ULV HD resin is sensitive to the thermal/mechanical shock of an airveyor. Improper conveyance may significantly increase density. A minimum of 24hrs of aging time is recommended before molding.

Minimum achievable density is expected to be:

| Expansion Method | Pre-puff Density, pcf (g/l) | Foam Density, pcf (g/l) |
|--------------------------|-----------------------------|-------------------------|
| Continuous-Single Pass | 1.45 (23.2) | 1.65 (26.4) |
| Continuous - Double Pass | 0.95 (15.2) | 1.10 (17.6) |
| Batch - Single Pass | 1.25 (21.0) | 1.35 (21.6) |

MOLDING

Expanded particles have been molded after several months. Compared to ARCEL 730, a lower molding steam pressure and shorter steam time should be used. Conventional EPS fill guns as small as 19 mm can be used; larger 21-22 mm fill guns and 25 mm ID fill hoses are recommended. The minimum recommended wall thickness is 18 mm, depending on design complexity and fill gun placement.

Refer to the [ARCEL Resin Tooling and Part Design Guide](#) for more detailed information.

ENVIRONMENTAL

STYROPEK' ARCEL resins are biologically and chemically inert. ARCEL resins are typically able to be recycled where EPS recycling facilities exist. Where recycling of STYROPEK' ARCEL resins is not possible, disposal to landfill or incineration in accordance with all applicable government laws and regulations is recommended. Please contact STYROPEK Beaver Valley Technology Center for more information on recycling and disposal.

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ARCEL[®] Resin - ULV HD

Foam Physical Properties



| Property | Test Method | Units | ARCEL [®] ULV HD Resin | | | | | | | | | | |
|------------------------------------|-------------|--------------------------------|---------------------------------|-------|------|------|------|------|-------|-------|-------|-------|-------|
| Density | ASTM-D3575 | pcf | 1.25 | 1.50 | 1.75 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 | 5.50 |
| | | g/l | 20 | 24 | 28 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 88 |
| Compressive Strength at 10% Strain | ASTM-D3575 | psi | 17 | 21 | 26 | 30 | 40 | 50 | 60 | 71 | 83 | 94 | 107 |
| Compressive Strength at 25% Strain | ASTM-D3575 | psi | 20 | 26 | 31 | 36 | 47 | 59 | 71 | 83 | 96 | 110 | 124 |
| Compressive Strength at 50% Strain | ASTM-D3575 | psi | 30 | 36 | 41 | 47 | 60 | 74 | 88 | 104 | 120 | 137 | 155 |
| Compressive Strength at 75% Strain | ASTM-D3575 | psi | 65 | 74 | 84 | 94 | 116 | 140 | 167 | 195 | 225 | 258 | 293 |
| Tensile Strength at Break | ASTM-D3575 | psi | 34.3 | 44.4 | 52.9 | 60.3 | 72.6 | 82.6 | 91.1 | 98.5 | 105 | 110.8 | 116.0 |
| Tear Strength at Max Load | ASTM-D3575 | lb/in | 7.8 | 10.4 | 12.6 | 14.5 | 17.7 | 20.3 | 22.5 | 24.4 | 26.1 | 27.6 | 29.0 |
| Flexural Strength at 5% Strain | ASTM-C203 | psi | 26.9 | 37.5 | 47.5 | 57.0 | 74.2 | 89.2 | 101.9 | 112.3 | 120.5 | 126.5 | 130.1 |
| Flexural Stress at Max Load | ASTM-C203 | psi | 30.7 | 41.3 | 51.2 | 60.7 | 78.1 | 93.5 | 106.9 | 118.3 | 127.6 | 134.9 | 140.2 |
| Flexural Strain at Max Load | ASTM-C203 | % | 10.5 | 10.2 | 9.9 | 9.6 | 9.0 | 8.4 | 7.8 | 7.3 | 6.7 | 6.1 | 5.5 |
| Puncture, Max Load | ASTM-D3763 | Lbf | 38 | 47 | 56 | 65 | 83 | 101 | 119 | 137 | 155 | 173 | 190 |
| Burn Rate | FMVSS302 | mm/min | 120.2 | 103.6 | 91.3 | 80.2 | 68.2 | 58.8 | 51.8 | 46.5 | 42.2 | 38.7 | 35.8 |
| Thermal Resistivity | ASTMC518 | Fft ² hr/ BTU in | 3.79 | 3.87 | 3.92 | 3.97 | 4.01 | 4.01 | 3.97 | 3.90 | 3.82 | 3.73 | 3.64 |

Aug 2021

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